

From: [Khoury, Ghassan](#)
To: [Sanchez, Carlos](#); [Villarreal, Chris](#); [Tzhone, Stephen](#)
Cc: [Rauscher, Jon](#)
Subject: RE: Arkwood Memorandum - Evaluation of Principal Threat Waste for Dioxin in Soil under 6" Soil Cover
Date: Tuesday, June 09, 2015 2:53:11 PM

Carlos, the word equate is not the proper word to use here. It is the concentration of dioxin in soil. The same soil concentration you use to come up with a HQ and the same soil concentration one uses to come up with the cancer risk. So the soil concentration of 22,000 ppt for a commercial/industrial scenario reflects a cancer risk of $1 \text{ E-}03$ (liver or other kind of cancer). The same soil concentration of 22,000 for a commercial/Industrial scenario reflects a HQ of 30 (impact fertility in young men). A cancer risk of $1\text{E-}03$ is one order of magnitude greater than the upper end of acceptable cancer risk range $1\text{E-}04$. If we use the same logic of one order of magnitude higher than the acceptable level, then one order of magnitude greater than the acceptable level of a HQ =1 is a HQ of 10.

From: Sanchez, Carlos
Sent: Tuesday, June 09, 2015 1:02 PM
To: Villarreal, Chris; Tzhone, Stephen
Cc: Khoury, Ghassan; Rauscher, Jon
Subject: RE: Arkwood Memorandum - Evaluation of Principal Threat Waste for Dioxin in Soil under 6" Soil Cover

Chris,

One quick question.

On the memo it was mentioned that a risk number of 10^{-3} equates to a HQ of 10. So an HQ of 1 equates to 10^{-4} ? I thought that an HQ of 1 equated to a 10^{-6} cancer level? CAS

From: Villarreal, Chris
Sent: Tuesday, June 09, 2015 12:45 PM
To: Sanchez, Carlos; Tzhone, Stephen
Cc: Khoury, Ghassan; Rauscher, Jon
Subject: Arkwood Memorandum - Evaluation of Principal Threat Waste for Dioxin in Soil under 6" Soil Cover

Attached

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